Year 2004

Air Quality Division

ANNUAL AIR EMISSIONS INVENTORY QUESTIONNAIRE

For Facilities Permitted to Operate an Asphalt Plant

The 2004 Annual Emissions Inventory Questionnaire includes 4 forms that are required to be completed and submitted to the Air Quality Division. Instructions for each form are included below. Upon completion, submit the forms along with the signature by the Responsible Official of the facility within 90 days of receipt of a letter from the Department.

FORM 1:	**Facility General Information**
SECTION I thru III:	Complete all fields as requested.
FORM 2:	**Equipment, Stack & Location Data**
Equipment Data:	List all the on-site equipment along with the Authorization To Operate (ATO) number where available. Indicate, if not available.
Stack Data:	Provide details of each stack.
Location Data:	List the county or counties where the equipment is operated.
FORM 3A-E:	**Emissions Data - Point & Fugitive Emissions** ***Once the data is inputted in the formulas are set to complete the calculations. Do not move or change any of the fields or columns.***
FORM 3A:	If a drum mix process was operational, skip this section and complete Form 3B? Based on the fuel type used, input the total tonnage of asphalt produced in the appropriate row.
FORM 3B:	Based on the fuel type used, input the total tonnage of asphalt produced in the appropriate row.
FORM 3C:	Based on the fuel used, choose the appropriate table and input the actual gallons of fuel used for the asphalt cement storage heaters.
FORM 3D:	Based on the fuel used, choose the appropriate table and input the horsepower of the generator and the total hours operated during the calendar year 2004.
FORM 3E:	Enter the number of emission points and total tonnage of materials processed through each point process. Input the miles travelled on the haul roads and storage piles by entering the average number of piles material that was stored and processed. If the number of hours stored is unknown, use 8760 hours to obtain a worst-case estimate. Input the screening operations, transfer points by entering the amount process, and number of screening transfer points.
FORM 4:	**Summary & Certification** A summarization of all the emissions by each pollutant will be listed within this form. All reports submitted to the Department should be certified true and accurate by the Responsible Official of the facility. This person is the owner or operator of the facility. **If there is a change of the Responsible Official of the facility, please notify the Department with an additional letter stating so.**

The completed questionnaire should be submitted to the following address:

Arizona Department of Environmental Quality
Attention: Darlene Celaya, Emission Inventory Team
Air Quality Division, Compliance Section 3415A-3
1110 West Washington Street
Phoenix, AZ 85007

If you have any question or have difficulty completing this form, please contact Darlene Celaya at (602) 771-7662.

FORM 1: FACILITY GENERAL INFORMATION **YEAR 2004**

SECTION I: ***Plant Identification & Mailing Information***

Customer Name: _____

Place Name: _____ Place ID: _____

Mailing Address: _____ City: _____ State: _____ Zip: _____

County: _____

Phone: _____ Fax: _____

Permit Number: _____ General Permit: Yes No

SECTION II: ***EI Contact***

EI Contact Name: _____ Title: _____

Telephone: _____ Fax: _____

SECTION III: ***Confidential Request***

Pursuant to Arizona Revised Statues §49-432 and §49-201, do you claim the Emissions Inventory data submittal confidential. If yes include which portions of the inventory are confidential along with a brief explanation:

Yes □

No □

FORM 2: EQUIPMENT, STACK, & LOCATION DATA **YEAR 2004**

Equipment Data

Equipment Type	Equipment ID	ATO #	Rated Capacity	Hours Operated

Stack Information

	Stack #1	Stack #2	Stack #3
Equipment Name			
Height (feet)			
Diameter (feet)			
Velocity (feet/second)			
Exhaust Gas Temperature (F)			
Flow Rate (actual cubic feet per minute)			

Operation Location

Date		County of Operation
From	To	

FORM 3A. ROTARY DRUM DRYER - BATCH MIX

I. CRITERIA POLLUTANTS

If a Drum Mix process is employed, skip this section and complete Section B.

Based on the fuel type used and the control used, please input the actual tons of asphalt produced in the appropriate row. *Conversion Factor: 1 ton = 2000 lbs*

		Natural Gas			**Oil / Waste Oil Fired**		
Controls/Process	Pollutant	(3) Amount Processed tons/year	(4) Emission Factor pounds/ton	Emission = (3)x(4)/2000 tons/year	(6) Amount Processed tons/year	(7) Emission Factor pounds/ton	Emission = (6)x(7)/2000 tons/year
Uncontrolled	PM		32			32	
	PM10		4.5			4.5	
Low Energy Scrubber	PM		0.081			ND	
	PM10		0.035			ND	
Venturi Scrubber	PM		0.056			0.086	
	PM10		0.025			0.055	
Fabric Filter	PM		0.044			0.074	
	PM10		0.02			0.05	
	SOx		0.005			0.24	
	CO		0.34			0.069	
	NOx		0.025			0.17	
Crumb Rubber	VOC		0.188			0.217	
Non-crumb Rubber	VOC		0.017			0.046	

FORM 3A. ROTARY DRUM DRYER - BATCH MIX

II. EMISSIONS OF HAPS - *Organic Pollutants* *Based on the fuel type used, input the actual tons of asphalt produced in the appropriate row.*

Pollutants	**Natural Gas fired** (1) Actual Throughput (tons per year)= (2) Emission Factor pounds/ton	Emissions = (1)x(2)/2000 tons/year	**Oil-fired** (3) Actual Throughput (tons per year)= (4) Emission Factor pounds/ton	Emissions = (3)x(4)/2000 tons/year	**Waste Oil fired** (5) Actual Throughput (tons per year)= (6) Emission Factor pounds/ton	Emissions = (5)x(6)/2000 tons/year
Acetaldehyde	0.00064		ND	-	0.0013	
Acrolein	ND	-	ND	-	0.000026	
Acetone*	0.0064		ND	-	0.00083	
Benzene	0.00035		ND	-	0.00041	
Benzo(a)anthracene	4.5E-9		ND	-	ND	-
Benzo(a)fluoranthene	4.5E-09		ND	-	ND	-
Chrysene	6.1E-09		ND	-	ND	-
Ethyl benzene	0.0033		ND	-	0.00038	
Formaldehyde	0.00086		0.0032		0.0032	
Methyl ethyl ketone	ND	-	ND	-	0.00002	
Naphthalene	42.0E-6		0.000045		0.00047	
Propionaldehyde	ND	-	ND	-	0.00013	
Quinone*	0.00027		ND	-	0.00016	
Toluene	0.0018		ND	-	0.00075	
Xylene	0.0043		ND	-	0.00016	
Arsenic	ND	-	0.00000066		0.0000019	
Barium*	ND	-	0.0000015		0.0000048	
Beryllium	ND	-	0.00000022		ND	-
Cadmium	ND	-	0.00000084		0.00000062	
Chromium	ND	-	0.00000089		0.000012	
Copper*	ND	-	0.0000037		0.0000061	
Hexavalent Chromium	ND	-	9.7E-09		ND	-
Lead	ND	-	0.00000074		0.000006	
Manganese	ND	-	0.0000099		0.000011	
Mercury	ND	-	4.5E-07		ND	-
Nickel	ND	-	4.2E-06		0.000015	
Phosphorus	ND	-	ND	-	0.000055	
Selenium	ND	-	9.2E-08		ND	-
Silver*	ND	-	ND	-	0.0000014	
Totals						

FORM 3B. ROTARY DRUM DRYER - DRUM MIX PROCESS

I. CRITERIA POLLUTANTS

Based on the fuel type used, input the actual tons of asphalt produced in the appropriate row. *Conversion Factor: 2000 lbs = 1 ton*

		Natural Gas			Oil / Waste Oil Fired		
Controls/Process	Pollutant	(3) Amount Processed tons/year	(4) Emission Factor pounds/ton	Emission = (3)x(4)/2000 tons/year	(6) Amount Processed tons/year	(7) Emission Factor pounds/ton	Emission = (6)x(7)/2000 tons/year
Uncontrolled	PM		19			19	
	PM10		4.3			4.3	
Low Energy Scrubber	PM		ND	-		ND	-
	PM10		ND	-		ND	-
Venturi Scrubber	PM		0.037			0.067	
	PM10		0.015			0.045	
Fabric Filter	PM		0.018			0.048	
	PM10		0.0081			0.038	
	SOx		0.0033			0.056	
	CO		0.056			0.036	
	NOx		0.03			0.075	
Crumb Rubber	VOC		0.221			0.24	
Non-crumb Rubber	VOC		0.051			0.069	

FORM 3B. ROTARY DRUM DRYER - DRUM MIX PROCESS

II. EMISSIONS OF HAPS - *Organic Pollutants* *Based on the fuel type used, input the actual tons of asphalt produced in the appropriate row.*

Pollutants	(1) **Natural Gas** fired - Actual Throughput (tons per year)=		(3) **Oil-fired** - Actual Throughput (tons per year)=		(5) **Waste Oil** fired - Actual Throughput (tons per year)=	
	(2) Emission Factor pounds/ton	Emissions = (1)x(2)/2000 tons/year	(4) Emission Factor pounds/ton	Emissions = (3)x(4)/2000 tons/year	(6) Emission Factor pounds/ton	Emissions = (5)x(6)/2000 tons/year
Acetaldehyde	ND	-	ND	-	0.0013	
Acrolein	ND	-	ND	-	0.000026	
Acetone*	ND	-	ND	-	0.00083	
Benzene	0.0012		ND	-	0.00041	
Benzo(a)anthracene	0.0000002		ND	-	ND	-
Benzo(a)pyrene	9.2E-09		ND	-	ND	-
Benzo(b)fluoranthene	0.0000001		ND	-	ND	-
Chrysene	0.00000035		ND	-	ND	-
Dibenz(a,h)anthracene	2.7E-09		ND	-	ND	-
Ethyl benzene	0.00029		ND	-	0.00038	
Formaldehyde	0.0036		0.0017		0.0032	
Indeno(1,2,3-cd)pyrene	7.3E-09		ND	-	ND	-
Methyl chloroform	0.000048		ND	-	ND	-
Methyl ethyl ketone	ND	-	ND	-	0.00002	
Naphthalene	0.000048		0.00015		0.00047	
Propionaldehyde	ND	-	ND	-	0.00013	
Quinone	0.00027		ND	-	ND	-
Toluene	0.0002		ND	-	0.00075	
Xylene	0.0004		ND	-	0.00016	
Arsenic	ND	-	0.00000025		0.0000019	
Barium*	ND	-	ND	-	0.0000048	
Cadmium	ND	-	0.00000025		0.00000062	
Chromium	ND	-	ND	-	0.000012	
Copper*	ND	-	ND	-	0.0000061	
Lead	ND	-	0.00000062		0.000006	
Manganese	ND	-	ND	-	0.000011	
Mercury	ND	-	7.3E-09		ND	-
Nickel	ND	-	ND	-	0.000015	
Phosphorus	ND	-	ND	-	0.000055	
Silver*	ND	-	ND	-	0.0000014	
Totals						

FORM 3C. EMISSIONS FROM ASPHALT CEMENT STORAGE HEATERS

I. CRITERIA POLLUTANTS

Based on the fuel type used, input the actual gallons of fuel used in 2004 in the appropriate row.

Pollutants	**Natural Gas fired**		**LPG**	
	(1) Fuel consumed: =		(3) Fuel consumed: =	
	(2) Emission Factor pounds/gallon	Emissions = (1)x(2)/2000 tons/year	(4) Emission Factor pounds/gallon	Emissions = (3)x(4)/2000 tons/year
Particulate Matter <10 Microns (PM10)	0.0000016		0.00045	
Carbon Monoxide	0.0000028		0.002	
Volatile Organic Compounds (VOC)	0.00000037		0.00019	
Sulfur Oxides (SO2)	0.00000008		0.0000026	
Nitrogen Oxides (NOx)	1.30E-05		0.0145	

Pollutants	**Distillate Oil**		**Residual Oil**	
	(5) Fuel consumed: =		(7) Fuel consumed: =	
	(6) Emission Factor pounds/gallon	Emissions = (5)x(6)/2000 tons/year	(8) Emission Factor pounds/gallon	Emissions = (7)x(8)/2000 tons/year
Particulate Matter <10 Microns (PM10)	0.00108		0.012	
Carbon Monoxide	0.005		0.005	
Volatile Organic Compounds (VOC)	0.0002		0.0028	
Sulfur Oxides (SO2)	0.0046		0.0044	
Nitrogen Oxides (NOx)	0.02		0.055	

FORM 3C. EMISSIONS FROM ASPHALT CEMENT STORAGE HEATERS

II. HAZARDOUS AIR POLLUTANTS

Based on the fuel type used, input the actual gallons of fuel used in 2004 in the appropriate row.

Pollutants	Distillate Oil		Residual Oil	
	(1) Gallons of fuel used per hour		(3) Gallons of fuel used per year	
	(2) Emission Factor pounds/gallon	Emissions = (1)x(2)/2000 tons/year	(4) Emission Factor pounds/gallon	Emissions = (3)x(4)/2000 tons/year
Antimony	ND	-	0.0000052	
Arsenic	0.00000059		0.0000099	
Beryllium	0.00000035		0.00000063	
Cadmium	0.0000015		0.000017	
Chromium	0.0000081		0.00001	
Cobalt	ND	-	0.000014	
Lead	0.0000012		0.000017	
Manganese	0.000002		0.0000073	
Mercury	0.00000042		0.0000025	
Nickel	0.000024		0.00024	
Selenium	ND	-	0.0000057	
Polycyclic organic material	0.0000031		0.000012	
Formaldehyde	0.000045		0.000042	
Totals				

FORM 3D. EMISSIONS FROM PROCESS SUPPORT GENERATORS - CRITERIA POLLUTANTS

Based on the fuel type used, input the capacity and actual hours operated in 2004.

FUEL: GASOLINE	(1) Capacity of **Generator #1** in Horsepower	(2) Hours of Operation per year	(4) Capacity of **Generator #2** in Horsepower	(5) Hours of Operation per year
Pollutants	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)	0.00072		0.00072	
Carbon Monoxide	0.44		0.44	
Volatile Organic Compounds (VOC)	0.022		0.022	
Sulfur Oxides (SOx)	0.00059		0.00059	
Nitrogen Oxides (NOx)	1.10E-02		1.10E-02	

DIESEL GREATER THAN 600HP	(1) Capacity of **Generator #1** in Horsepower	(2) Hours of Operation per year	(4) Capacity of **Generator #2** in Horsepower	(5) Hours of Operation per year
Pollutants	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)	0.0007		0.0007	
Carbon Monoxide	0.0055		0.0055	
Volatile Organic Compounds (VOC)	0.0007		0.0007	
Sulfur Oxides (SOx)	0.0065		0.0065	
Nitrogen Oxides (NOx)	2.40E-02		2.40E-02	

DIESEL LESS THAN OR EQUAL TO 600HP	(1) Capacity of **Generator #1** in Horsepower	(2) Hours of Operation per year	(4) Capacity of **Generator #2** in Horsepower	(5) Hours of Operation per year
Pollutants	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)	0.0022		0.0022	
Carbon Monoxide	0.0067		0.0067	
Volatile Organic Compounds (VOC)	0.0025		0.0025	
Sulfur Oxides (SOx)	0.002		0.002	
Nitrogen Oxides (NOx)	3.10E-02		3.10E-02	

FORM 3E. FUGITIVE EMISSIONS

Input the number of emission points and the actual tons of material processed through each point in 2004 in the appropriate row.
If no controls are used, do not fill in the actual throughput in the Controlled Emissions column

SOURCE	Pollutants	Uncontrolled Emissions				Controlled Emissions			
		(1) Amount Processed tons/year	(2) No. of Emission Points quantity	(3) Emission Factor lb/ton	Emissions = (1)x(2)x(3)/2000 tons/yr	(5) Amount Processed tons/year	(6) No. of Emission Points quantity	(7) Emission Factor pounds/ton	Emissions = (5)x(6)x(7)/2000 tons/year
Continuous and batch drop operations	PM			0.0033				0.00033	
	PM10			0.0016				0.00016	
Transfer operations to feed hopper, elevated bins & weigh hoppers	PM			0.0033				0.00033	
	PM10			0.0016				0.00016	
Cement transfer to silos	PM			0.0048				0.00001	
	PM10			0.0039				0.0000034	
Cement transfer to weigh hoppers	PM			0.000081				ND	-
	PM10			0.000038				ND	-

Source	Pollutant	Uncontrolled Emissions				Controlled Emissions			
		(1) Amount Process tons/year	(2) No. of Transfer/Screening Point quantity	(3) Emission Factor pounds/ton/point	Emissions = (1)x(2)x(3)/ 2000 tons/year	(4) Amount Process tons/year	(5) No. of Transfer/Screening Point quantity	(6) Emission Factor pounds/ton/point	Emissions = (4)x(5)x(6)/ 2000 tons/year
Conveyor transfer points	PM			0.0027				0.000093	
	PM10			0.0013				0.000045	
Screening operations	PM			0.03				0.0017	
	PM10			0.014				0.00078	

FORM 3E. FUGITIVE EMISSIONS

Input the actual tons of material processed through each equipment in 2004 in the appropriate row.

Source	Pollutant	Uncontrolled Emissions			Controlled Emissions		
		(1) No. of Piles quantity	(2) Uncontrolled pounds/hour/pile	Emissions = (1)x(2)x8760/2000 tons/year	(4) No. of Piles quantity	(5) Controlled pounds/hour/pile	Emissions = (4)x(5)x8760/2000 tons/year
Wind erosion from aggregate storage piles	PM		0.001			0.0001	
	PM10		0.0005			0.00005	
Wind erosion from sand storage piles	PM		0.012			0.0012	
	PM10		0.006			0.0006	

Input the actual vehicle miles travelled in 2004 in the appropriate row.

SOURCE	Pollutant	Uncontrolled Emissions			Controlled Emissions		
		(1) Vehicles Miles Traveled/ Year VMT/year	(2) Emission Factor pounds/VMT	Emissions = (1)x(2)/2000 tons/year	(4) Vehicles miles traveled/year VMT/year	(5) Emission Factor pounds/VMT	Emissions = (4)x(5)/2000 tons/year
Vehicle traffic (unpaved roads, transport vehicles)	PM		2.2			0.22	
	PM10		1			0.1	
Vehicle traffic (front end loaders, unpaved roads)	PM		1.6			0.16	
	PM10		0.7			0.07	

FORM 4: SUMMARY & CERTIFICATION	YEAR 2004

Total all the emissions for each pollutant and enter in the table below.

Pollutant	Tonnage (tons per year)
Particulate Matter (PM)	
Particulate Matter Less Than 10 Microns (PM10)	
Nitrogen Oxides (NOx)	
Sulfur Oxides (SOx)	
Volate Organic Compounds (VOC)	
Carbon Monoxide (CO)	
Hazard Air Pollutants (HAPs) - Organics & Metals	

Certification of Truth & Accuracy

I certify that I have knowledge of the facts set forth in this questionnaire, and that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Arizona Department of Environmental Quality as public record.

Signature of Responsible Official: _____ Date: _____

Print Name: _____

Title: _____